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Rapid Aid – Android Application for Emergency Services

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Abstract: ***At an alarming hour of emergency, we have seen that a lot of lives are at risk and many die due to improper planning and execution. So we have made an application which will be accessed to all the common citizens also would help the vehicle drivers who are working in emergency services, from various segments like Police vehicles, Ambulances also Fire Brigades at the time of emergency to reach the destination as soon as possible and execute their plan of action. It will also include all the necessary information from all the emergency-related departments of India. The application made is using android java and can be accessed by almost 95% of devices in the entire world. The prototypes of the UI and UX for our system are made via Adobe XD. Furthermore entering inside the application the login system is made using the Firebase technology which is fast being cloud based. We get an e-mail as soon as we insert our email to sign up as a user else we can access the app data being the guest user.***

Keywords: Rapid Aid, Firebase, Emergency Services.

I. INTRODUCTION

Our project name is Rapid Aid- Android Application for Emergency Services. This Android Application contains all the information regarding various emergency services. In this application, we have implemented a cloud-based messaging service using Firebase technology. In this application, we will include the feature in which ambulance and fire brigade drivers can communicate with traffic police during peak hours. The purpose of this application is to tackle the consequences of various natural and man-made disasters. The number of smartphone users in India was estimated to reach over 748 million in 2020. So we have decided to make an android application that can be useful in emergency situations like an earthquake, emergency medical conditions etc. and can be accessed by all.

A. Definition

There is no such live service that fills the communication gap between emergency services and Traffic police who are working on the ground. There are few IOT and Software-based models but they are not reliable or in ready to use condition for our real world at present. Some models are too advanced which cost hefty charges which can't be paid by governments and some models are below user expectations. Hence there is an urgent need to make such a cost-effective model that can be beneficial for everyone and can easily be upgraded over time.

B. Motivation

The main motivation of the project for us came from the death toll that was certainly increasing like the bar graphs of the stock market. Sadly, every one of us lost dear or near ones in the sudden pandemic and ambulances were not reaching fatal spots on time. Hence constantly thinking of the possible solutions we researched the possible problems and the basic problem all around us was traffic people very dying not because of Covid-19 but because of not reaching on time to hospital and hence to change the scenario and be prepared for further pandemics we came up with a solution that would benefit people and save lives of the common man. We figured out being Software Engineers 'What can we contribute to our society ?',' Being Engineers, How can we save lives ?', 'How can cost-effective systems work and could be developed further for a larger scale?'. As our country ranks 2nd in terms of population we have to consider population factor too, So we came up with this completely software-based model.

C. Scope

In the initial phase, our scope is region restricted for our city as the project runs smooth soon it would be transformed into a national emergency relief application and various states and countries can join us and it would be a worldwide used application for emergency services by emergency services.

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D. Proposed System

The algorithm process proposed is shown in Figure. The admins are developers of the application who have access to all the information stored in a database and have raw data required to create the model from which admins can bring necessary changes as required. There are 3 User logins available for a different types of users, Guest users don't require to sign up or log in to the system and can access directly to the open-source data. The other 2 user logins are for Traffic Police and Emergency Services Drivers. There are separate user interfaces for the respective users and can only be logged in once they have completed the sign-up process authentication using the firebase authenticator system. Emergency service drivers can send messages to multiple traffic police at the tip of a single click. The multiple messages sent are only sent to the police of those respective cities which get instant alerts and can come up on the road to make a path-way which would create relief for the drivers and could eventually save the life of patients. Police can view the existing paths of the ambulance via google maps and can also view the aids ambulances have completed with their history. On contrary, Ambulance drivers can update and delete their aids which will be notified to the traffic police when updated. All the data transferring from one user to another user is saved and retrieved from firebase cloud storage systems.

II. WORKFLOW OF SYSTEM

As the user starts with our application user can get access to our guest user interface without logging in or signup. If the user wants to log in then he can log in to the system from the main UI or home page. If the user is new then they have to register into our application and once the registration is done they can log in and further continue the process. The user is given a choice to log in as an emergency service driver or traffic police. So as he logs in being a specific user respective

A. Methodology

There are 3 levels of group communication in distributed s Systems, considering an individual android device as a node, they can communicate with other nodes present in the system. The 3 levels of group communication are Unicast group communication, Broadcast group communication and Multicast group communication. We have used Multicast group communication in our project the following figure (Fig ...) explains how the system works. A sender node can send a single message to multiple selected nodes. As it sends the message simultaneously to all the receiver nodes it is very efficient and can be used in our day-to-day life.

In our project Rapid Aid, The Emergency service vehicle driver is at the sender node and Traffic police are at the receiver node. The sender can send a single message to all selective nodes at the receiver end. The selective nodes are classified by the city names so the messages are sent by multicast methodology and not by unicast which is one sender to one receiver or by broadcast which is from one sender to all the receivers. We have used hashing in Hash-maps to save and retrieve data from the Firebase database which is again a cloud-based technology for efficient data storing and different execution of CRUD operations.

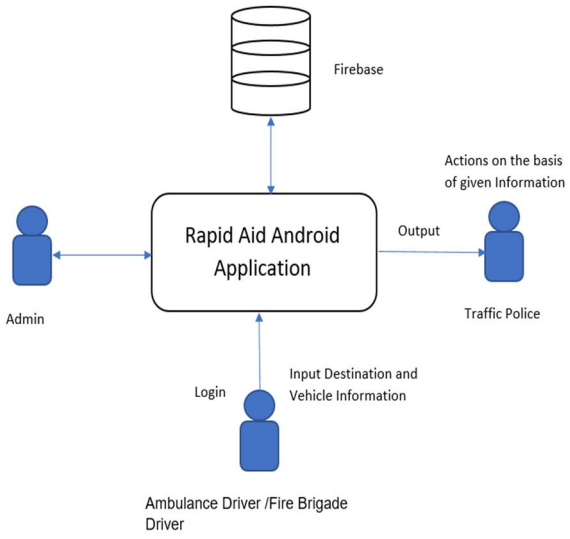


Figure 1: Proposed system

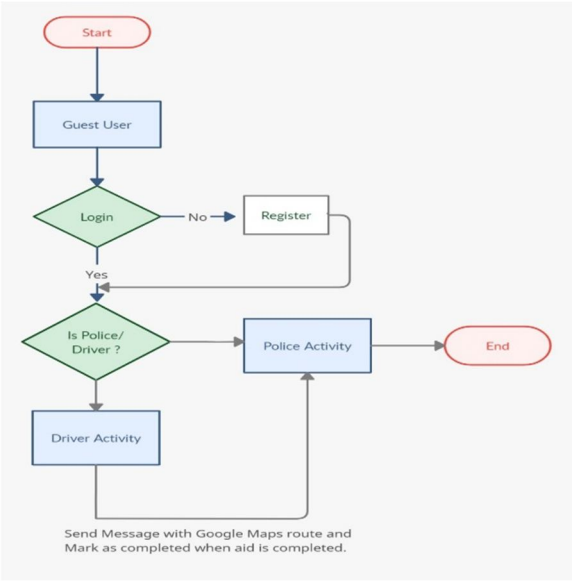


Figure 2: System workflow

III. IMPLEMENTATION

The project implementation can be divided into 3 parts

A. User Login

The application consists of 2 login methods which can be classified into traffic police login and emergency service drivers log in the login page for both is the same but when they enter their information of respective accounts then they get respective user interfaces. Sample Alert Notification and Contact List

B. Driver Sending Messages using the Multicast Methodology to Traffic police

An emergency driver can create update and delete the ongoing aids, when the driver creates a new aid and clicks on send button all the traffic police of that city get a notification pop up that new aid has been created in their city and nearby traffic police have to come onto destination for clearing the traffic. The data is stored in firebase and we retrieve it and send it to all the traffic police using queries.

C. Log out

The last step for the user after completion of everything is to get out of the application without losing their data as signup for every new aid can be a hectic task. So Log out plays a very crucial role over here and hence when a user clicks on logout the system sends an alert box that does the user really needs to Log out if the user clicks on yes then the user gets out of the application and if the user clicks on no then user stays over the application with all the access they already have been provided by the administrator.

IV. CONCLUSION

Rapid Aid is an essential application to have on a Smartphone. It is a personal security application that lets ambulance and fire brigade drivers send notifications to traffic police via text messages in case of emergency. It also gives you the ability to call multiple emergency services with the tap of a single button. This application can be very helpful if you are in any kind of emergency. The in-app notification messages sent to traffic police also have the location information.

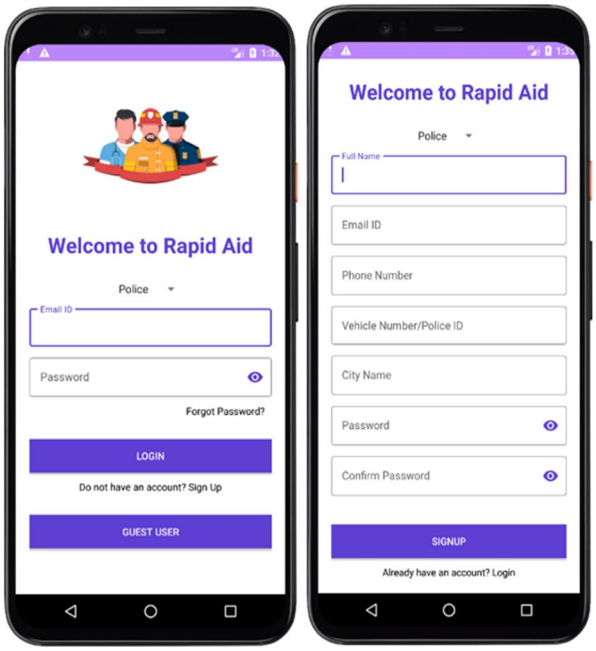


Figure 3: Output

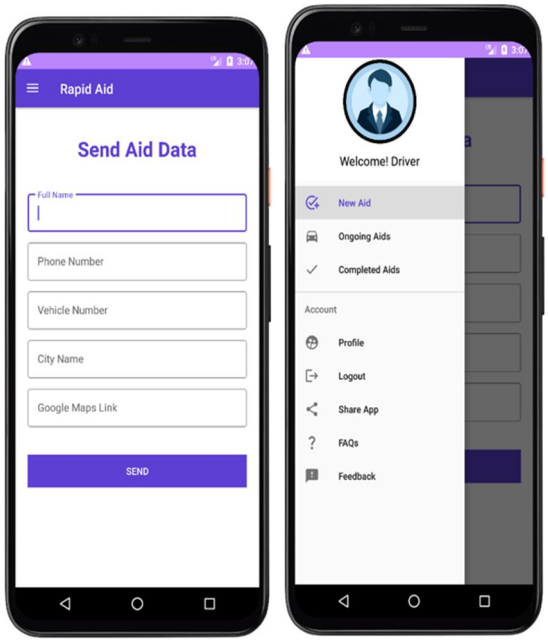


Figure 4: Output

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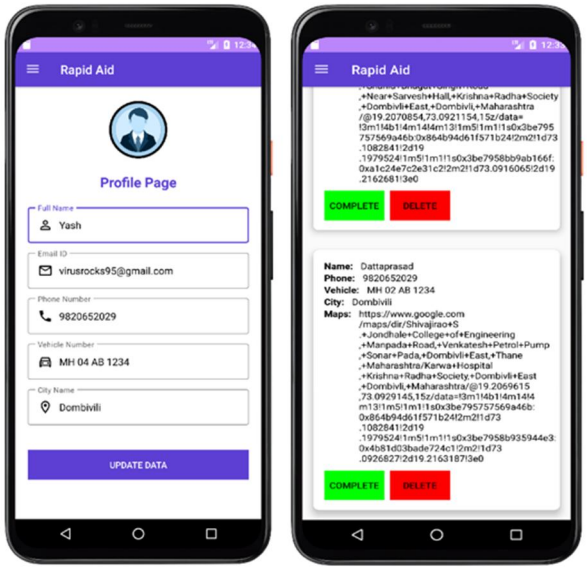


Figure 5: Output

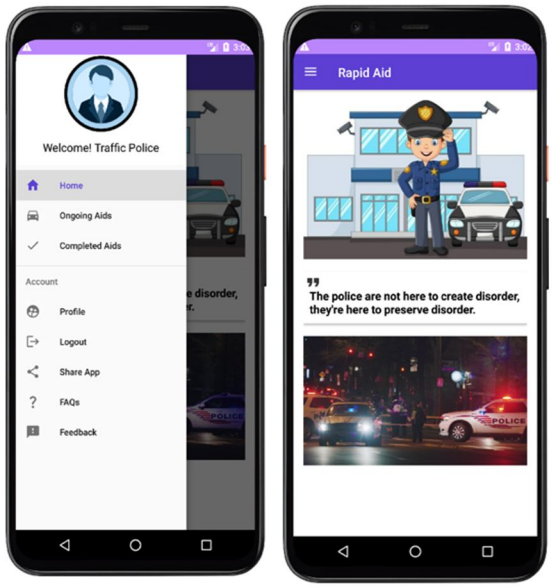
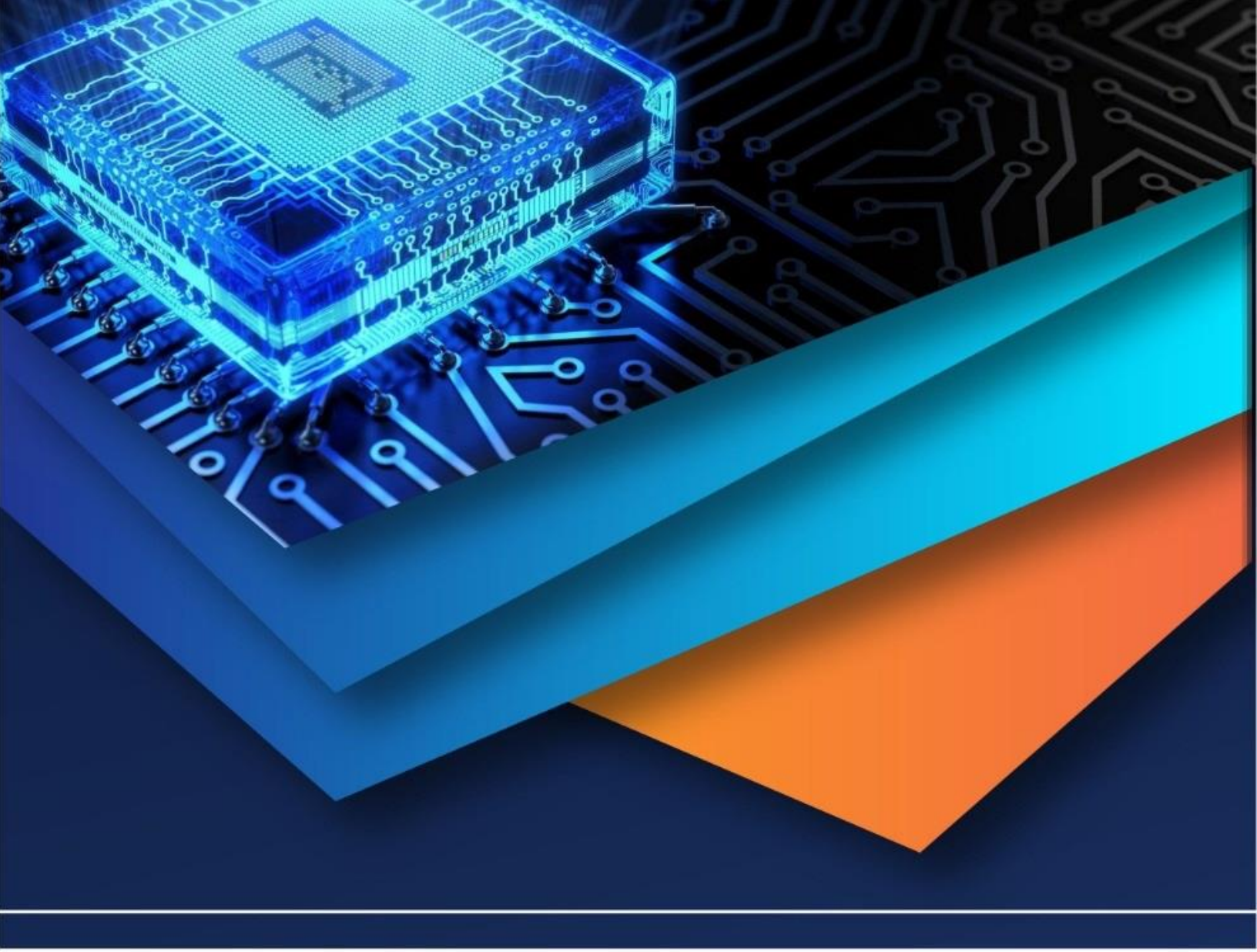


Figure 6: Output

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